Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A communications device comprising:

an Optical domain Adaptive Dispersion Compensation Module (OADCM) operable to provide a first dispersion compensation to a received signal, the received signal having a plurality of wavelengths;

an Electrical domain Adaptive Distortion Compensation Module (EADCM) coupled to the OADCM and operable to provide a second dispersion compensation to the received signal; and

a controller coupled to both the OADCM and the EADCM, the controller operable to selectively control a level of the first and the second dispersion compensation to be applied to the received signal, where the controller controls the EADCM based on feed forward information provided to the controller from the OADCM .

2. (Original) The communications device of claim 1, wherein the controller controls operating characteristics of at least one of the OADCM and the EADCM.

3. (Original) The communications device of claim 2, wherein the controller controls the OADCM based on feedback information provided to the controller from the EADCM.

4. (Cancelled)

5. (Original) The communications device of claim 2, further comprising:

an Optical Amplifier with automatic-Gain Control (OAGC) coupled to the OADCM and the controller.

6. (Original) The communications device of claim 5, further comprising:

a PIN photodiode detector in combination with a trans-impedance amplifier (PIN/TIA) coupled to the OAGC and the controller.

7. (Original) The communications device of claim 1 integrated into an optical signal receiver, wherein the EADCM provides signal distortion measurements to the controller taken from an incoming signal, the controller in turn adjusting the respective operating characteristics of the OADCM, and wherein in operation at least one of the EADCM and OADCM apply dispersion compensation to the incoming signal.

8. (Original) The communications device of claim 7, wherein the EADCM provides polarization mode dispersion compensation.

9. (Original) The communications device of claim 7, wherein the OADCM provides chromatic dispersion compensation.

10. (Original) The communications device of claim 7, wherein the EADCM includes an equalizer that produces symbol estimates.

11. (Original) The communications device of claim 7, wherein the EADCM includes a blind equalizer that produces error values.

12. (Original) The communications device of claim 1 integrated into an optical signal transmitter, wherein in operation at least one of the EADCM and OADCM provides pre-emphasis to a transmitted optical signal to substantially overcome dispersion the transmitted optical signal will encounter en route to a receiver.

13. (Previously Presented) An Electrical domain Adaptive Distortion Compensation Module (EADCM) comprising:

a Multi-Phase Eye Quality Monitor (MPEQM) operable to provide signal distortion measurements of an incoming electrical signal received at the EADCM; and

an equalizer circuit operable to perform dispersion compensation on the received electrical signal having a plurality of channels.

14. (Previously presented) The EADCM of claim 13, wherein the MPEQM comprises:

a clock recovery circuit for retrieving a clock signal from the incoming signal;

a first comparator path for comparing a first portion of the incoming signal to a scanning reference, the first comparator path timed according to the clock signal from the clock recovery path;

a second comparator path for comparing a second portion of the incoming signal to an optimal timing reference, the second comparator path timed according to the clock signal from the clock recovery path; and

a difference accumulator for keeping track of the number of instances that respective outputs from the first and second comparator paths differ, as a measure of the eye quality.

15. (Previously presented) The EADCM of claim 13, wherein the equalizer circuit is a distortion equalizer.

16. (Previously presented) The EADCM of claim 13, wherein the distortion equalizer is a decision feedback equalizer.

17. (Currently Amended) A method comprising:

i) measuring signal distortion of an electrical signal having a plurality of channels;

ii) processing the signal distortion measurements to produce at least one control value for one of an optical domain adaptive dispersion compensation module ("OADCM") or an electrical domain adaptive distortion compensation module ("EADCM"); and

iii) selectively applying the at least one control value to the EADCM ~~selectively applying the at least one control value alternatively to either the OADCM or the EADCM~~ to provide dispersion compensation to the optical signal, using feed forward information provided to the controller from the OADCM.

18. (Previously presented) The method according to claim 17, wherein the signal distortion measurements are signal quality measurements.

19. (Previously presented) The method according to claim 17, wherein the signal distortion measurements are symbol error estimates.

20. (Previously presented) The method according to claim 17, wherein the signal distortion measurements are error values.

21. (Withdrawn) A method of translating channel states into a Channel Value (CV) at a time t and state i assuming that a channel has a memory length L, comprising:

i) estimating tap-weight vectors h1 and h2;

ii) calculating a CV value as a function of the estimated tap-weight vectors

iii) determining a mean square error estimate using the CV value; and

iv) determining operation of a controller in the Initialization or Adaptive Control Mode based on the mean square error estimate.

22. (Withdrawn) A method of Blind Channel Initialization, the method comprising:

i) calculating tap-weight vectors h1 and h2, each having respective elements;

ii) operating an Electrical domain Adaptive Dispersion Compensation Module until it reaches a static status;

iii) computing a first mean square error value;

iv) shifting elements of the tap-weight vector h2 by one element and repeating step iii) to obtain a second mean square error value;

v) repeating step iv) until a first non-zero element reaches an end of tap-weight vector h2, thus obtaining a first set of mean square error values;

vi) shifting the elements of the tap-weight vector h1 by one element and repeating steps iii) to v) to obtain a second set of mean square error values;

vii) halving the original values of the two left-most non-zero elements in both h1 and h2 and repeating steps iii) to vi) to obtain a third set of mean square error values;

viii) doubling the original values of the two left-most non-zero elements in both h1 and h2 and repeating steps iii) to vi) to obtain a fourth set of means square error values; and

ix) selecting a smallest mean square error value of the combined first means square error value, second mean square error value, and the first, second, third and fourth sets of mean square errors values corresponding to values that are best initial values of tap-weight vectors h1 and h2.

23. (Withdrawn) A method of Blind Channel Initialization, the method comprising:

i) collecting a set of error measurements corresponding to different permutations of elements belonging to at least one tap-weight vector; and

ii) selecting a permutation of the elements of the at least one tap-weight vector corresponding to a minimum collected error measurement.